

§ 229.217

49 CFR Ch. II (10–1–07 Edition)

(1) The life of such locomotive, except that records for a locomotive destroyed in a rail equipment accident/incident shall be retained for at least 12 months following the accident/incident, or

(2) Twenty years after the date on which the repair or modification was performed.

(c) *Inspection of records.* Each custodian of records referred to in paragraphs (a) and (b) shall, upon request by FRA or an FRA-certified State inspector, make available for inspection and duplication within 7 days, any records referred to in paragraphs (a) and (b) of this section.

(d) *Third party storage of records.* Each custodian of records referred to in paragraphs (a) and (b) of this section may delegate storage duties to a third party; however, the custodian retains all responsibility for compliance with this section.

[71 FR 36914, June 28, 2006]

§ 229.217 Fuel tank.

(a) *External fuel tanks.* Locomotives equipped with external fuel tanks shall, at a minimum, comply with the requirements of AAR S-5506, “Performance Requirements for Diesel Electric Locomotive Fuel Tanks” (October 1, 2001), except for section 4.4. This paragraph does not apply to locomotives subject to the fuel tank safety requirements of § 238.223 or § 238.423 of this chapter. The Director of the Fed-

eral Register approves incorporation by reference of the AAR S-5506, “Performance Requirements for Diesel Electric Locomotive Fuel Tanks” (October 1, 2001) in this section in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy of the incorporated standard from the Association of American Railroads, 50 F Street NW., Washington, DC 20001. You may inspect a copy of the incorporated standard at the Federal Railroad Administration, Docket Clerk, 1120 Vermont Ave., NW, Suite 7000, Washington, DC 20590 or at the National Archives and Records Administration (NARA). For more information on the availability of this material at NARA, call 202-741-6030, or go to http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

(b) *Internal fuel tanks.* Locomotives equipped with internal fuel tanks shall, at a minimum, comply with the requirements of § 238.223(b) of this chapter.

[71 FR 36914, June 28, 2006]

APPENDIX A TO PART 229—FORM FRA 6180–49A

EDITORIAL NOTE: Appendix A, published at 45 FR 21118, Mar. 31, 1980, as part of the original document, is not carried in the CFR. Copies of Form FRA F6180–49A are available by contacting the Federal Railroad Administration, Office of Standards and Procedures, 400 7th St., SW., Washington, DC 20590.

APPENDIX B TO PART 229—SCHEDULE OF CIVIL PENALTIES¹

Section	Violation	Willful violation
Subpart A—General		
229.7 Prohibited acts: Safety deficiencies not governed by specific regulations: To be assessed on relevant facts	\$1,000–5,000	\$2,000–7,500
229.9 Movement of noncomplying locomotives	(¹)	(¹)
229.11 Locomotive identification	1,000	2,000
229.13 Control of locomotives	2,500	5,000
229.17 Accident reports	2,500	5,000
229.19 Prior Waivers	(¹)	(¹)
Subpart B—Inspection and tests		
229.21 Daily inspection:		
(a)(b):		
(1) Inspection overdue	2,000	4,000
(2) Inspection report not made, improperly executed, or not retained	1,000	2,000
(c) Inspection not performed by a qualified person	1,000	2,000

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Section	Violation	Willful violation
229.23 Periodic inspection General		
(a)(b):		
(1) Inspection overdue	2,500	5,000
(2) Inspection performed improperly or at a location where the underneath portion cannot be safely inspected	2,500	5,000
(c)(d):		
(1) Form missing	1,000	2,000
(2) Form not properly displayed	1,000	2,000
(3) Form improperly executed	1,000	2,000
(e) Replace Form FRA F 6180-49A by April 2	1,000	2,000
(f) Secondary record of the information reported on Form FRA F 6180.49A	1,000	2,000
229.25		
(a) through (e)(4) Tests: Every periodic inspection	2,500	5,000
(e)(5) Ineffective maintenance	8,000	16,000
229.27 Annual tests	2,500	5,000
229.29 Biennial tests	2,500	5,000
229.31:		
(a) Biennial hydrostatic tests of main reservoirs	2,500	5,000
(b) Biennial hammer tests of main reservoirs	2,500	5,000
(c) Drilled telltale holes in welded main reservoirs	2,500	5,000
(d) Biennial tests of aluminum main reservoirs	2,500	5,000
229.33 Out-of-use credit	1,000	2,000

Subpart C—Safety Requirements

229.41 Protection against personal injury	2,500	5,000
229.43 Exhaust and battery gases	2,500	5,000
229.45 General condition: To be assessed based on relevant facts	1,000–5,000	2,000–7,500
229.46 Brakes: General	2,500	5,000
229.47 Emergency brake valve	2,500	5,000
229.49 Main reservoir system:		
(a)(1) Main reservoir safety valve	2,500	5,000
(2) Pneumatically actuated control reservoir	2,500	5,000
(b)(c) Main reservoir governors	2,500	5,000
229.51 Aluminum main reservoirs	2,500	5,000
229.53 Brake gauges	2,500	5,000
229.55 Piston travel	2,500	5,000
229.57 Foundation brake gear	2,500	5,000
229.59 Leakage	2,500	5,000
229.61 Draft system	2,500	5,000
229.63 Lateral motion	2,500	5,000
229.64 Plain bearing	2,500	5,000
229.65 Spring rigging	2,500	5,000
229.67 Trucks	2,500	5,000
229.69 Side bearings	2,500	5,000
229.71 Clearance above top of rail	2,500	5,000
229.73 Wheel sets	2,500	5,000
229.75 Wheel and tire defects:		
(a),(d) Slid flat or shelled spot(s):		
(1) One spot 2½" or more but less than 3" in length	2,500	5,000
(2) One spot 3" or more in length	5,000	7,500
(3) Two adjoining spots each of which is 2" or more in length but less than 2½" in length	2,500	5,000
(4) Two adjoining spots each of which are at least 2" in length, if either spot is 2½" or more in length	5,000	7,500
(b) Gouge or chip in flange of:		
(1) more than 1½" but less than 1⅝" in length; and more than ½" but less than ⅝" in width	2,500	5,000
(2) 1⅝" or more in length and ⅝" or more in width	5,000	7,500
(c) Broken rim	5,000	7,500
(e) Seam in tread	2,500	5,000
(f) Flange thickness of:		
(1) ⅞" or less but more than ⅜"	2,500	5,000
(2) ⅜" or less	5,000	7,500
(g) Tread worn hollow	2,500	5,000
(h) Flange height of:		
(1) 1½" or greater but less than 1⅝"	2,500	5,000
(2) 1⅝" or more	5,000	7,000
(i) Tire thickness	2,500	5,000
(j) Rim thickness:		
(1) Less than 1" in road service and ¾" in yard service	2,500	5,000
(2) 1⅝" or less in road service and 1⅜" in yard service	5,000	7,500
(k) Crack of less than 1"	5,000	7,500

Section	Violation	Willful viola- tion
(1) Crack of less than 1"	2,500	5,000
(2) Crack of 1" or more	5,000	7,500
(3) Break	5,000	7,500
(l) Loose wheel or tire	5,000	7,500
(m) Welded wheel or tire	5,000	7,500
229.77 Current collectors	2,500	5,000
229.79 Third rail shoes and beams	2,000	4,000
229.81 Emergency pole; shoe insulation	2,500	5,000
229.83 Insulation or grounding	5,000	7,500
229.85 Door and cover plates marked "Danger"	2,500	5,000
229.87 Hand operated switches	2,500	5,000
229.89 Jumpers; cable connections:		
(a) Jumpers and cable connections; located and guarded	2,500	5,000
(b) Condition of jumpers and cable connections	2,500	5,000
229.91 Motors and generators	2,500	5,000
229.93 Safety cut-off device	2,500	5,000
229.95 Venting	2,500	5,000
229.97 Grounding fuel tanks	2,500	5,000
229.99 Safety hangers	2,500	5,000
229.101 Engines:		
(a) Temperature and pressure alarms, controls, and switches	2,500	5,000
(b) Warning notice	2,500	5,000
(c) Wheel slip/slide protection	2,500	5,000
229.103 Safe working pressure; factor of safety	2,500	5,000
229.105 Steam generator number	500	1,000
229.107 Pressure gauge	2,500	5,000
229.109 Safety valves	2,500	5,000
229.111 Water-flow indicator	2,500	5,000
229.113 Warning notice	2,500	5,000
229.115 Slip/slide alarms	2,500	5,000
229.117 Speed indicators	2,500	5,000
229.119 Cabs, floors, and passageways:		
(a)(1) Cab set not securely mounted or braced	2,500	5,000
(2) Insecure or improper latching device	2,500	5,000
(b) Cab windows of lead locomotive	2,500	5,000
(c) Floors, passageways, and compartments	2,500	5,000
(d) Ventilation and heating arrangement	2,500	5,000
(e) Continuous barrier	2,500	5,000
(f) Containers for fuses and torpedoes	2,500	5,000
229.121 Locomotive Cab Noise:		
(a) Performance Standards		
(1) Failure to meet sound level	5,000	7,500
(2) Improper maintenance alterations	2,500	5,000
(3) Failure to comply with static test protocols	2,500	5,000
(b) Maintenance of Locomotives		
(1) Failure to maintain excessive noise report record or respond to report as re- quired	2,500	5,000
(3) Failure to make good faith effort as required	2,500	5,000
(4) Failure to maintain record as required	2,000	4,000
229.123 Pilots, snowplows, end plates	2,500	5,000
229.125		
(a) Headlights	2,500	5,000
(d) Auxiliary lights	2,500	5,000
229.127 Cab lights	2,500	5,000
229.129 Locomotive horn:		
(a) Prescribed sound levels	2,500	5,000
Arrangement of horn	2,500	5,000
(b) Failure to perform sound level test	2,500	5,000
(c) Sound level test improperly performed	2,500	5,000
Record of sound level test improperly executed, or not retained	1,000	4,000
229.131 Sanders	1,000	2,000
229.135 Event Recorders:		
(a) Lead locomotive without in-service event recorder	2,500	5,000
(b) Failure to meet equipment requirements	2,500	5,000
(c) Unauthorized removal or failure to remove from service	2,500	5,000
(d) Improper response to out of service event recorder	2,500	5,000
(e) Failure to preserve data or unauthorized extraction of data	2,500	5,000
(g) Tampering with device or data	2,500	5,000
229.141 Body structure, MU locomotives	2,500	5,000
229.137 Sanitation, general:		
(a) Sanitation compartment in lead unit, complete failure to provide required items	\$5,000	\$10,000
(1) Ventilation	2,500	5,000
(2) Door missing	2,000	4,000

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Section	Violation	Willful violation
(2)(i) Door doesn't close	1,000	2,000
(2)(ii) No modesty lock	1,000	2,000
(3) Not equipped with toilet in lead	5,000	10,000
(4) Not equipped with washing system	1,000	2,000
(5) Lack of paper	1,000	2,000
(6) Lack of trash receptacle	1,000	2,000
(b) Exceptions:		
(1)(i) Commuter service, failure to meet conditions of exception	2,500	5,000
(1)(ii) Switching service, failure to meet conditions of exception	2,500	5,000
(1)(iii) Transfer service, failure to meet conditions of exception	2,500	5,000
(1)(iv) Class III, failure to meet conditions of exception	2,500	5,000
(1)(v) Tourist, failure to meet conditions of exception	2,500	5,000
(1)(vi) Control cab locomotive, failure to meet conditions of exception	2,500	5,000
(2) Noncompliant toilet	5,000	10,000
(c) Defective/unsanitary toilet in lead unit	2,500	5,000
(1-5) Failure to meet conditions of exception	2,500	5,000
(d) Defective/unsanitary unit; failure to meet conditions for trailing position	2,500	5,000
(e) Defective/sanitary unit; failure to meet conditions for switching/transfer service	2,500	5,000
(f) Paper, washing, trash holder; failure to equip prior to departure	2,500	5,000
(g) Inadequate ventilation; failure to repair or move prior to departure	2,500	5,000
(h) Door closure/modesty lock; failure to repair or move	1,000	2,000
(i) Failure to retain/maintain of equipped units	2,500	5,000
(j) Failure to equip new units/in-cab facility	2,500	5,000
(k) Failure to provide potable water	2,500	5,000
229.139 Servicing requirements:		
(a) Lead occupied unit not sanitary	2,500	5,000
(b) Components not present/operating	2,500	5,000
(c) Occupied unit in switching, transfer service, in trailing position not sanitary	2,500	5,000
(d) Defective unit used more than 10 days	2,500	5,000
(e) Failure to repair defective modesty lock	1,000	2,000
Subpart D—Locomotive Crashworthiness Design Requirements		
229.205 General requirements:		
(a)(1) Wide-nose locomotive not designed in compliance with AAR S-580-2005	\$5,000	\$7,500
(2) Wide-nose locomotive not designed in compliance with new approved design standard	5,000	7,500
(3) Wide-nose locomotive not designed in compliance with alternate approved design standard	5,000	7,500
(b) Monocoque or semi-monocoque locomotive not in compliance with design requirements	5,000	7,500
(c) Narrow-nose not in compliance with design requirements	5,000	7,500
229.206 Design requirements:		
Locomotive fails to meet—		
(1) Emergency egress requirements	2,500	5,000
(2) Emergency interior lighting requirements	2,500	5,000
(3) Interior configuration requirements	2,500	5,000
229.213 Locomotive manufacturing information:		
(a) Failure to retain required information	2,500	5,000
(b) Failure to produce required information	2,500	5,000
229.215 Retention and inspection of designs:		
(a) Failure to retain required design records	2,500	5,000
(b) Failure to retain required repair or modification records	2,500	5,000
(c) Failure to make records available when requested	2,500	5,000
229.217 Fuel tank:		
(a) External fuel tank	5,000	7,500
(b) Internal fuel tank	5,000	7,500

¹ A penalty may be assessed against an individual only for a willful violation. Generally, when two or more violations of these regulations are discovered with respect to a single locomotive that is used by a railroad, the appropriate penalties set forth above are aggregated up to a maximum of \$10,000 per day. However, a failure to perform, with respect to a particular locomotive, any of the inspections and tests required under subpart B of this part will be treated as a violation separate and distinct from, and in addition to, any substantive violative conditions found on that locomotive. Moreover, the Administrator reserves the right to assess a penalty of up to \$27,000 for any violation where circumstances warrant. See 49 CFR part 209, appendix A.

Failure to observe any condition for movement set forth in § 229.9 will deprive the railroad of the benefit of the movement-for-repair provision and make the railroad and any responsible individuals liable for penalty under the particular regulatory section(s) concerning the substantive defect(s) present on the locomotive at the time of movement. Failure to comply with § 229.19 will result in the lapse of any affected waiver.

[53 FR 52931, Dec. 29, 1988, as amended at 58 FR 36615, July 8, 1993; 61 FR 8888, Mar. 6, 1996; 63 FR 11622, Mar. 10, 1998; 67 FR 16052, Apr. 4, 2002; 69 FR 30594, May 28, 2004; 70 FR 21920, Apr. 27, 2005; 70 FR 37942, June 30, 2005; 71 FR 36915, June 28, 2006; 71 FR 47667, Aug. 17, 2006; 71 FR 63136, Oct. 27, 2006]

EFFECTIVE DATE NOTE: At 72 FR 51197, Sept. 6, 2007, footnote 1 to appendix B to part 229 was amended by removing the numerical amount “\$10,000” and adding in its place the numerical amount “\$16,000”, effective October 9, 2007.

APPENDIX C TO PART 229—FRA LOCOMOTIVE STANDARDS—CODE OF DEFECTS

EDITORIAL NOTE: Appendix C, published at 45 FR 21121, Mar. 31, 1980, as part of the original document, is not carried in the CFR.

APPENDIX D TO PART 229—CRITERIA FOR CERTIFICATION OF CRASHWORTHY EVENT RECORDER MEMORY MODULE

Section 229.135(b) requires that certain locomotives be equipped with an event recorder that includes a certified crashworthy event recorder memory module. This appendix prescribes the requirements for certifying an event recorder memory module (ERMM) as crashworthy, including the performance criteria and test sequence for establishing the crashworthiness of the ERMM as well as the marking of the event recorder containing the crashworthy ERMM.

A. GENERAL REQUIREMENTS

1. Each manufacturer that represents its ERMM as crashworthy shall, by marking it as specified in Section B of this appendix, certify that the ERMM meets the performance criteria contained in this appendix and that test verification data are available to a railroad or to FRA upon request.

2. The test verification data shall contain, at a minimum, all pertinent original data logs and documentation that the test sample preparation, test set up, test measuring devices and test procedures were performed by designated, qualified personnel using recognized and acceptable practices. Test verification data shall be retained by the manufacturer or its successor as long as the specific model of ERMM remains in service on any locomotive.

3. A crashworthy ERMM shall be marked by its manufacturer as specified in Section B of this appendix.

B. MARKING REQUIREMENTS

1. The outer surface of the event recorder containing a certified crashworthy ERMM shall be colored international orange. In addition, the outer surface shall be inscribed, on the surface allowing the most visible area, in black letters on an international orange background, using the largest type size that can be accommodated, with the words **CERTIFIED DOT CRASHWORTHY**, followed by the ERMM model number (or other such designation), and the name of the manufacturer of the event recorder. This information may be displayed as follows:

CERTIFIED DOT CRASHWORTHY

Event Recorder Memory Module Model Number

Manufacturer's Name

Marking “**CERTIFIED DOT CRASHWORTHY**” on an event recorder designed for installation in a railroad locomotive is the certification that all performance criteria contained in this appendix have been met and all functions performed by, or on behalf of, the manufacturer whose name appears as part of the marking, conform to the requirements specified in this appendix.

2. Retro-reflective material shall be applied to the edges of each visible external surface of an event recorder containing a certified crashworthy ERMM.

C. PERFORMANCE CRITERIA FOR THE ERMM

An ERMM is crashworthy if it has been successfully tested for survival under conditions of fire, impact shock, static crush, fluid immersion, and hydro-static pressure contained in one of the two tables shown in this section of Appendix D. (See Tables 1 and 2.) Each ERMM must meet the individual performance criteria in the sequence established in Section D of this appendix. A performance criterion is deemed to be met if, after undergoing a test established in this Appendix D for that criterion, the ERMM has preserved all of the data stored in it. The data set stored in the ERMM to be tested shall include all the recording elements required by § 229.135(b). The following tables describe alternative performance criteria that may be used when testing an ERMM's crashworthiness. A manufacturer may utilize either table during its testing but may not combine the criteria contained in the two tables.

TABLE 1—ACCEPTABLE PERFORMANCE CRITERIA—OPTION A

Parameter	Value	Duration	Remarks
Fire, High Temperature	750 °C (1400 °F)	60 minutes	Heat source: Oven.
Fire, Low Temperature	260 °C (500 °F)	10 hours	
Impact Shock	55g	100 ms	½ sine crash pulse.
Static Crush	110kN (25,000 lbf)	5 minutes	

TABLE 1—ACCEPTABLE PERFORMANCE CRITERIA—OPTION A—Continued

Parameter	Value	Duration	Remarks
Fluid Immersion	#1 Diesel, #2 Diesel, Water, Salt Water, Lube Oil.	Any <i>single</i> fluid, 48 hours.	Immersion followed by 48 hours in a dry location without further disturbance.
.....	Fire Fighting Fluid	10 minutes, following immersion above.	
Hydrostatic Pressure	Depth equivalent = 15 m. (50 ft.).	48 hours at nominal temperature of 25 °C (77 °F).	

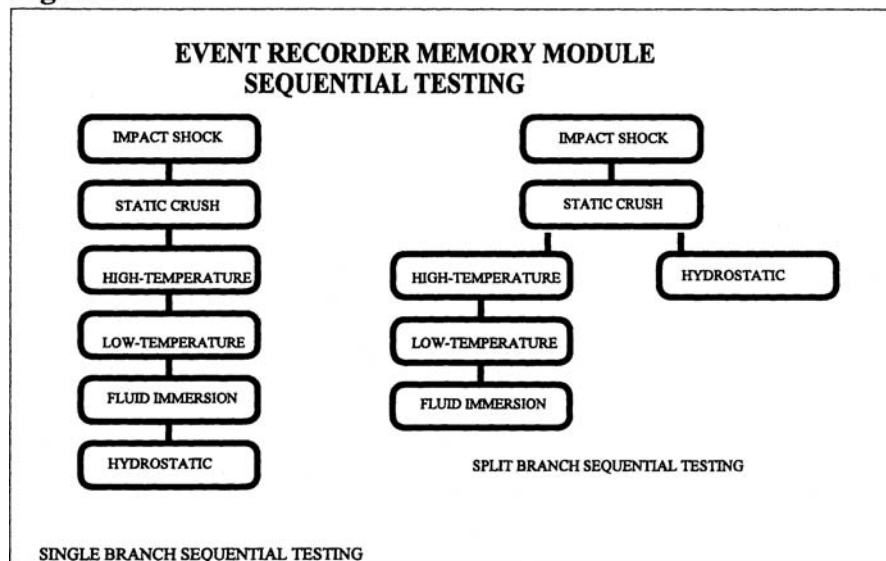
TABLE 2—ACCEPTABLE PERFORMANCE CRITERIA—OPTION B

Parameter	Value	Duration	Remarks
Fire, High Temperature	1000 °C (1832 °F)	60 minutes	Heat source: Open flame.
Fire, Low Temperature	260 °C (500 °F)	10 hours	Heat source: Oven.
Impact Shock—Option 1	23gs	250 ms.	½ sine crash pulse.
Impact Shock—Option 2	55gs	100 ms	
Static Crush	111.2kN (25,000 lbf)	5 minutes.	
.....	44.5kN (10,000 lbf)	(single “squeeze”)	Applied to 25% of surface of largest face.
Fluid Immersion	#1 Diesel, #2 Diesel, Water, Salt Water, Lube Oil, Fire Fighting Fluid.	48 hours <i>each</i> .	
Hydrostatic Pressure	46.62 psig (= 30.5 m. or 100 ft.).	48 hours at nominal temperature of 25 °C (77 °F).	

D. TESTING SEQUENCE

In order to reasonably duplicate the conditions an event recorder may encounter, the ERMM shall meet the various performance criteria, described in Section C of this appendix, in a set sequence. (See Figure 1). If all tests are done in the set sequence (single branch testing), the same ERMM must be

utilized throughout. If a manufacturer opts for split branch testing, each branch of the test must be conducted using an ERMM of the same design type as used for the other branch. Both alternatives are deemed equivalent, and the choice of single branch testing or split branch testing may be determined by the party representing that the ERMM meets the standard.

Figure 1**E. TESTING EXCEPTION**

If a new model ERMM represents an evolution or upgrade from an older model ERMM that was previously tested and certified as meeting the performance criteria contained in Section C of this appendix, the new model ERMM need only be tested for compliance with those performance criteria contained in Section C of this appendix that are potentially affected by the upgrade or modification. FRA will consider a performance criterion not to be potentially affected if a preliminary engineering analysis or other pertinent data establishes that the modification or upgrade will not change the performance of the older model ERMM against the performance criterion in question. The manufacturer shall retain and make available to FRA upon request any analysis or data relied upon to satisfy the requirements of this paragraph to sustain an exception from testing.

[70 FR 37942, June 30, 2005]

**APPENDIX E TO PART 229—PERFORMANCE
CRITERIA FOR LOCOMOTIVE CRASH-
WORTHINESS**

This appendix provides performance criteria for the crashworthiness evaluation of alternative locomotive designs, and design standards for wide-nosed locomotives and any for other locomotive, except monocoque/semi-monocoque design locomotives and narrow-nose design locomotives. Each of the fol-

lowing criteria describes a collision scenario and a given performance measure for protection provided to cab occupants, normally through structural design. Demonstration that these performance criteria have been satisfied may be accomplished through any of the methods described in §229.205. This performance criteria is intended to prevent intrusion into the cab seating area occupied by crews. This excludes inner and outer vestibule areas.

(a) *Front end structure (collision posts).*—(1) *Objective.* The front end structure of the locomotive must withstand a frontal impact with a proxy object which is intended to simulate lading carried by a heavy highway vehicle (see figure 1).

(2) *Proxy object characteristics and orientation.* The proxy object must have the following characteristics: Cylindrical shape; 48-inch diameter; 126-inch length; 65,000 pound minimum weight; and uniform density. The longitudinal axis of the proxy object must be oriented horizontally perpendicular to the longitudinal axis of the locomotive.

(3) *Impact and result.* The front end structure of the locomotive must withstand a 30-mph impact with the proxy object resulting in no more than 24 inches of crush along the longitudinal axis of the locomotive, measured from the foremost point on the collision post, and with no more than 12 inches of intrusion into the cab. The center of impact must be 30 inches above the top of the locomotive underframe along the longitudinal centerline of the locomotive.

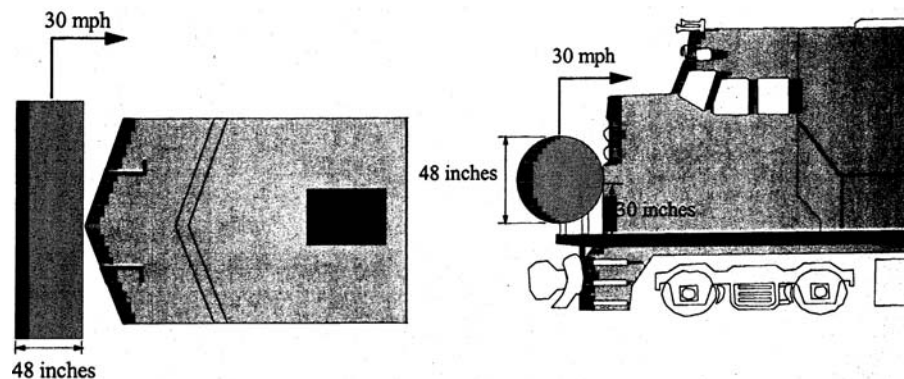


Figure 1. Schematic of Front End Structure (Collision Posts) Impact

(b) Front end structure (short hood)

(1) *Objective.* The front end structure of the locomotive must withstand an oblique impact with a proxy object intended to simulate an intermodal container offset from a freight car on an adjacent parallel track (see figure 2).

(2) *Proxy object characteristics and orientation.* The proxy object must have the following characteristics: Block shape; 36-inch width; 60-inch height; 108-inch length; corners having 3-inch radii corners; 65,000 pound minimum weight; and uniform density. The longitudinal axis of the proxy object must be

oriented parallel to the longitudinal axis of the locomotive. At impact, the proxy object must be oriented such that there are 12 inches of lateral overlap and 30 inches from the bottom of the proxy object to the top of the locomotive underframe.

(3) *Impact and results.* The front end structure of the locomotive must withstand a 30-mph impact with the proxy object resulting in no more than 60 inches of crush along the longitudinal axis of the locomotive, measured from the first point of contact on the short hood post, and with no more than 12 inches of intrusion into the cab.

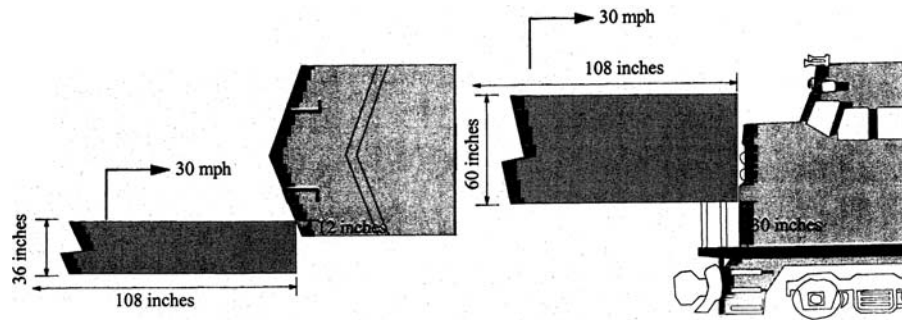


Figure 2. Schematic of Front End Structure (Short Hood) Offset Impact

[71 FR 36915, June 28, 2006]

APPENDIXES F-G TO PART 229
[RESERVED]

APPENDIX H TO PART 229: STATIC NOISE
TEST PROTOCOLS—IN-CAB STATIC

This appendix prescribes the procedures for the in-cab static measurements of locomotives.

I. MEASUREMENT INSTRUMENTATION

The instrumentation used should conform to the following: An integrating-averaging sound level meter shall meet all the requirements of ANSI S1.43-1997 (Reaffirmed 2002), "Specifications for Integrating-Averaging Sound Level Meters," for a Type 1 Instrument. In the event that a Type 1 instrument is not available, the measurements may be conducted with a Type 2 instrument. The acoustic calibrator shall meet the requirement of the ANSI S1.40-1984 (Reaffirmed 2001), "Specification for Acoustical Calibrators." The Director of the Federal Register approves the incorporation by reference of ANSI S1.43-1997 (Reaffirmed 2002) and ANSI S1.40-1984 (Reaffirmed 2001) in this section in accordance with 5 U.S.C. 552(a) and 1

CFR part 51. You may obtain a copy of the incorporated standards from the American National Standards Institute at 1819 L Street, NW., Washington, DC 20036 or <http://www.ansi.org>. You may inspect a copy of the incorporated standards at the Federal Railroad Administration, Docket Room, 1120 Vermont Ave., NW., Suite 700, Washington, DC 20005, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html

II. TEST SITE REQUIREMENTS

The test site shall meet the following requirements:

- (1) The locomotive to be tested should not be positioned where large reflective surfaces are directly adjacent to or within 25 feet of the locomotive cab.
- (2) The locomotive to be tested should not be positioned where other locomotives or rail cars are present on directly adjacent tracks next to or within 25 feet of the locomotive cab.

(3) All windows, doors, cabinets seals, etc., must be installed in the locomotive cab and be closed.

(4) The locomotive must be running for sufficient time before the test to be at normal operating temperature.

(5) The heating, ventilation and air conditioning (HVAC) system or a dedicated heating or air conditioner system must be operating on high, and the vents must be open and unobstructed.

(6) The locomotive shall not be tested in any site specifically designed to artificially lower in-cab noise levels.

III. PROCEDURES FOR MEASUREMENT

(1) $L_{Aeq, T}$ is defined as the A-weighted, equivalent sound level for a duration of T seconds, and the sound level meter shall be set for A-weighting with slow response.

(2) The sound level meter shall be calibrated with the acoustic calibrator immediately before and after the in-cab static tests. The calibration levels shall be recorded.

(3) Any change in the before and after calibration level(s) shall be less than 0.5 dB.

(4) The sound level meter shall be measured at each of the following locations:

(A) 30 inches above the center of the left seat;

(B) Centered in the middle of the cab between the right and left seats, and 56 inches above the floor;

(C) 30 inches above the center of the right seat; and

(D) One foot (0.3 meters) from the center of the back interior wall of the cab and 56 inches above the floor. See Figure 1.

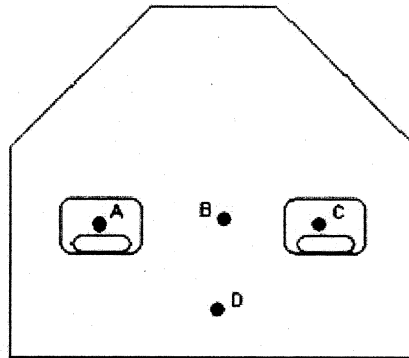


Figure 1. Microphone Locations inside Typical Locomotive Cab

(5) The observer shall stand as far from the microphone as possible. No more than two people (tester, observers or crew members) shall be inside the cab during measurements.

(6) The locomotive shall be tested under self-loading conditions if so equipped. If the locomotive is not equipped with self load, the locomotive shall be tested with no-load (No-load defined as maximum RPM—no electric load) and an adjustment of 3 dB added to the measured level.

(7) The sound level shall be recorded at the highest horsepower or throttle setting.

(8) After the engine speed has become constant and the in-cab noise is continuous, $L_{Aeq, T}$ shall be measured, either directly or using a 1 second sampling interval, for a

minimum duration of 30 seconds at each measurement position ($L_{Aeq, 30s}$).

(9) The highest $L_{Aeq, 30s}$ of the 4 measurement positions shall be used for determining compliance with §229.121(a).

(10) A locomotive that has failed to meet the static test requirements of this regulation may be re-tested in accordance with the requirements in section II of this appendix.

IV. RECORDKEEPING

To demonstrate compliance, the entity conducting the test shall maintain records of the following data. The records created under this procedure shall be retained and made readily accessible for review for a minimum of three years. All records may be

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maintained in either written or electronic form.

(1) Name(s) of persons conducting the test, and the date of the test.

(2) Description of locomotive being tested, including: make, model number, serial number, and date of manufacture.

(3) Description of sound level meter and calibrator, including: make, model, type, serial number, and manufacturer's calibration date.

(4) The recorded measurement during calibration and for each microphone location during operating conditions.

(5) Other information as appropriate to describe the testing conditions and procedure, including whether or not the locomotive was tested under self-loading conditions, or not.

(6) Where a locomotive fails a test and is re-tested under the provisions of §III(9) of this appendix, the suspected reason(s) for the failure.

[71 FR 63136, Oct. 27, 2006]

**PART 230—STEAM LOCOMOTIVE
INSPECTION AND MAINTENANCE
STANDARDS**

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230.59 Fusible plugs.